

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
P.D.B. White) Group Art Unit: 1712 (parent)
Serial No.: Not yet assigned)
Filed: Herewith) Examiner: R. Sellers (parent)
For: AMINE-MODIFIED EPOXY RESIN)
REACTED IN PRESENCE OF)
LATENT HARDENER)
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PRELIMINARY AMENDMENT

Box PATENT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicant requests entry of the following amendments prior to examination on the
merits.

IN THE TITLE

Please replace the title with the following new title:

“Amine-Modified Epoxy Resin Reacted In Presence Of Latent Hardener”

IN THE SPECIFICATION

Please replace the first paragraph on page 1 with the following two paragraphs:

Title: Amine-Modified Epoxy Resin Reacted In Presence Of Latent Hardener

This application is a continuation of 09/077,049 filed on May 18, 1998.

IN THE CLAIMS

Please cancel claims 1-20 without prejudice or disclaimer.

Please add the following new claims:

21. (New) A method for making a one component heat curable epoxy resin system, comprising the step of mixing together components (A), (B), (C), and (E):

- (A) an epoxy resin or compound containing more than one epoxy group;
- (B) an amine solidifying system present in insufficient quantities to cause gelation after the amino hydrogen atoms are consumed by epoxy groups, under the reaction conditions chosen for (A) and (B);
- (C) a hardener system for (A) and the reaction product of (A) and (B), wherein (C) is different from (B); and
- (E) an expanding agent;

wherein (A) and (B) react to completion at room temperature in the presence of (C) and (E), and

wherein the reaction between (A) and (B) does not cause (C) or (E) to substantially react.

22. (New) A method according to claim 21, wherein the mixing of the composition is carried out batchwise or continuously.

23. (New) A method according to claim 21, wherein the mixed composition and the shape and size of container ensure that the excess heat generated does not increase the temperature of the composition to a point to cause (C) or (E) to substantially react.

24. (New) A method according to claim 21, wherein the mixing step is carried out in the resin system's final container.

25. (New) A method according to claim 21, wherein the partially solidified mixture is heated to speed completion provided the temperature chosen or the temperature reached due to the completion of the solidification reaction does not cause (C) or (E) to substantially react.

26. (New) A method according to claim 21, wherein the majority of the epoxy groups are present as glycidyl ether, glycidyl amine, glycidyl ester, cycloaliphatic and other epoxy resins.

27. (New) A method according to claim 21, wherein the epoxy group containing compounds individually or as mixtures are free flowing liquids at 80 °C or below.

28. (New) A method according to claim 21, wherein the solidifying agents are mainly aromatic cycloaliphatic or dicyclic primary amines, secondary amines or mixtures thereof and optionally acid accelerators.

29. (New) A method according to claim 21, wherein the majority of the solidifying amine groups originates from at least difunctional amines.

30. (New) A method according to claim 21, wherein hardener system (C) is selected from aromatic amines such as 4,4'-diaminodiphenyl sulphone, boron trifluoride amine complexes, latent imidazoles, carboxylic acids, hydrazides, dicyandiamide, latent epoxy amine adducts and substituted ureas.

31. (New) A method according to claim 21, wherein expanding agent (E) is an agent generating gases by chemical decomposition or by boiling of liquids or expansion of gases contained within expandable shells.

32. (New) A one component heat curable epoxy resin system, obtained by mixing together components (A), (B), (C), and (E):

- (A) an epoxy resin or compound containing more than one epoxy group;
- (B) an amine solidifying system present in insufficient quantities to cause gelation after the amino hydrogen atoms are consumed by epoxy groups, under the reaction conditions chosen for (A) and (B);
- (C) a hardener system for (A) and the reaction product of (A) and (B), wherein (C) is different from (B); and
- (E) an expanding agent;

wherein (A) and (B) react to completion at room temperature in the presence of (C) and (E), and

wherein the reaction between (A) and (B) does not cause (C) or (E) to substantially react.

33. (New) A cured product obtained by heating a system according to claim 32.

34. (New) A method for making a one component heat curable epoxy resin system, comprising the step of mixing together components (A), (B), (C), and (E):

(A) an epoxy resin or compound containing more than one epoxy group;

(B) an amine solidifying system present in insufficient quantities to cause gelation after the amino hydrogen atoms are consumed by epoxy groups, under the reaction conditions chosen for (A) and (B);

(C) a latent hardener system for (A) and the reaction product of (A) and (B), wherein (C) is different from (B); and

(E) an expanding agent;

wherein (A) and (B) react to completion at room temperature in the presence of (C) and (E), and

wherein the reaction between (A) and (B) does not cause (E) to substantially react.

REMARKS

Upon entry of this amendment, claims 21-34 will be pending.

The title has been amended to correspond to the amended title of parent U.S. Patent Application 09/077,049. The specification has been amended to replace the title heading and to add a claim of priority to the same parent application. Claims 1-20 have been canceled. Claims 21-34 have been added. No new matter has been added. Claims 21-34 are supported by the specification and claims as originally filed, in particular by the specification, page 5, line 5, and page 15, last line. If *in haec verba* support is found lacking, the specification would have clearly conveyed possession of the subject matter to a person of skill in the art. Claims 21-34 thus satisfy the written description requirement of the first paragraph of 35 U.S.C. § 112. *See M.P.E.P. § 2163.02 (8th ed., 2001).*

Claims 21, 32, and 34 contain the word “substantially.” The Federal Circuit has held that terms such as “substantially,” which are widely used in patent claims, are acceptable if reasonably describing the claimed subject matter to a person of skill in the art. *See Exxon Research and Eng’g Co. v. U.S.*, 60 U.S.P.Q.2d 1272 (Fed. Cir. 2001); *Ecolab Inc. v. Envirochem Inc.*, 60 U.S.P.Q.2d 1173 (Fed. Cir. 2001) (citing *Andrew Corp. v. Gabriel Electronics, Inc.*, 847 F.2d 819, 6 U.S.P.Q.2d 2010 (Fed. Cir. 1988)). The Board of Appeals and Patent Interferences has also repeatedly held that claims containing the term “substantially” satisfy the definiteness requirement of the second paragraph of 35 U.S.C. § 112. *See Ex parte Sabin*, 139 U.S.P.Q. 528 (BPA&I 1963); *Ex parte Benning*, 128

U.S.P.Q. 97 (BPA&I 1960); *Ex parte Butler*, 116 U.S.P.Q. 597 (BPA&I 1958); *Ex parte Roundy*, 79 U.S.P.Q. 96 (BPA&I 1948); *Ex parte Stephens*, 71 U.S.P.Q. 304 (BPA&I 1946); *Ex parte Kiser*, 69 U.S.P.Q. 185 (BPA&I 1946). Finally, the M.P.E.P. allows for “substantially” in the claims. *See* M.P.E.P. § 2173.05(b)D (8th ed., 2001). A person of skill in the art would understand that while (C) and/or (E) may react to some extent, such reaction must be insufficient to adversely affect processing, storage, or transport of the resin system in a container (specification, page 7, lines 11-13 and penultimate paragraph, and page 8, last two lines).

Applicant submits that this application is now in condition for examination on the merits. If the Office has questions, the Office is invited to call Applicant’s Representative directly at (202) 974-6018.

Please charge or credit Deposit Account No. 12-2475 for all fees as needed.

Respectfully submitted,

LYON & LYON LLP

Dated: 11/13/01
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